

**CLAIMS**

- 5 1. A stack comprising an impermeable metal structure, at least one first metal fiber layer and at least one second metal fiber layer, said impermeable metal structure being sintered to one side of said first metal fibers layer, said second metal fibers layer being sintered to the other side of said first metal fibers layer, characterized in that the planar air permeability of said stack being more than 0.02 l/min\*cm,  
10 the porosity of said second metal fiber layer being less than 80%.
- 15 2. A stack as in claim 1, said stack comprising two first metal fiber layers and two second metal fiber layers, said first metal fiber layers being sintered each to one side of the impermeable metal structure, said second metal fiber layers being sintered to the other sides of said first metal fiber layers.
- 20 3. A stack as in claim 1 or 2, said first metal fiber layers having a porosity of more than 80%
4. A stack as in claim 1 to 3, said second metal fiber layers having a perpendicular air permeability of less than 200 l/min\*dm<sup>2</sup>.
- 25 5. A stack as in claim 1 to 4, said first metal fiber layers comprising fibers with equivalent diameter of more than 20μm
6. A stack as in claim 1 to 5, said second metal fibers layers comprising fibers with equivalent diameter of less than 30μm
- 30 7. A stack as in claim 1 to 6, said first metal fiber layers having a thickness of more than 0.5mm

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8. A stack as in claim 1 to 7, said second metal fiber layers having a thickness of less than 0.2mm
- 5 9. A stack as in claim 1 to 8, said stack having a transversal electric resistance less than  $30 \cdot 10^{-3}$  Ohm
- 10 10. A stack as in claim 1 to 9, said impermeable metal structure being a metal plate.
11. A stack as in claim 1 to 9, said impermeable metal structure being a metal foil.
12. A stack as in claim 1 to 11, said metal fibers being stainless steel fibers.
- 15 13. A stack as in claim 1 to 11, said metal fibers being Ni-fibers or Ni alloy fibers
14. A stack as in claim 1 to 11, said metal fibers being Ti-fibers
- 20 15. A stack as in claim 1 to 14, said metal fibers having the same alloy of said impermeable metal structure.
16. A fuel cell, comprising stacks as in claim 1 to 15.
- 25 17. An electrolyser, comprising stacks as in claim 1 to 15.
18. The use of a stack as in claim 1 to 15 in fuel cells or electrolyzers.